

Amendments to the Specification:

1. Directly beneath the title of the application, please insert the following new paragraph:

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of U.S. Patent Application No. 09/718,374, filed on November 24, 2000, now U.S. Patent No. 6,678,413 issued on January 13, 2004, the subject matter of which is hereby incorporated by reference in its entirety.

2. Please replace the paragraph on page 7, lines 10-21 with the following paragraph:

Virtual zones are another invention that has been implemented in the system. In all the experiments, the animal is moving around the cage, and the activity distribution in different zones of the cage is of great interest to many scientists. The conventional approach is to use infrared photobeams to divide the cage into zones. Photobeams are released from tubes at one end, and a sensor on the opposite end receives the photobeams. When photobeams are interrupted by the animal, the receiver records the signal. In this way, the animal can move around with its activity distribution across zones is recorded and calculated. In this invention, virtual zones are used instead of the zones created by photobeams. Graphic tools are designed and provided for the users. Users draw the zones as they want using the graphic tools. The software tracks the animal and records how the animal crosses the zones and stays in the zones as defined by the user.

3. Please add the following new paragraph on page 38, between line 2 and line 3:

FIG. 3 is a flowchart of method steps for automatic video analysis for object recognition and characterization, according to one embodiment of the invention. In step 305, top view video of an animal in a behavioral analysis apparatus is obtained. In step 306, top view background video is obtained of the behavioral analysis apparatus. In step 307, the foreground object images (animal) are segmented and in step 308 the foreground object (animal) is identified. In step 309 component features are calculated and in step 310 feature points (body parts) of the animal are identified.

4. Please add the following sentence on page 42, line 1, between the “314.” and “An example”:

Statistics about these freezing events are generated and exported 319.

5. Please make the following changes to the specification where indicated:

On page 6, line 9, replace “product” with – produce --.

On page 7, line 4, replace “apparatus,. .” with – apparatus. --.

On page 16, line 17, replace “anima’s” with – animal’s --.

On page 39, line 14, replace “715 720” with – 715, 720 --.